Instructor Resources

Environmental Injustice:
When the Grass is Actually Greener on the Other Side

Created by:

Description

This activity combines predictive graphing with peer-reviewed data critiques and group discussion. Students will be discussing the basic principles of pollution, exposure to chemical releases, and air pollution. This will include specific examples (Flint Water Crisis, Cancer Alley, Uniontown AL, and Cheraw SC). Students will predict pollution and emissions across the United States based on population and compare it with data collected from the CDC to examine which populations are considered to be “at risk”, and discuss how we make decisions about pollution management as a society.

Learning Goals

1.Students will understand the role different identities (socioeconomic status, race, ethnicity, and gender) in environmental justice.
2.Students will understand the disproportional implications of environmental factors for oppressed populations.

Learning Objectives

1.Students will define environmental injustice.
2.Students will evaluate cases of environmental injustice.

Suggested Courses

Ecology, Introductory Biology, Human Physiology, Health and Wellness

Scientific Processing Skills:	Making observations, interpreting data, reviewing prior research
Pedagogical Approaches:	Collaborative work, interactive lecture, other
Bloom’s Cognitive Levels:	Application and analysis, Synthesis/Evaluation/Creation
Principles of how people learn:	Focuses student on the material to be learned, Requires students to do the bulk of the work, Leverages differences among learners
Vision and Change Competencies:	Ability to understand the relationship between science and society, Ability to tap into the interdisciplinary nature of science
Core Biological Concepts Covered:	Trophic levels and networks, bioaccumulation, human interactions and environmental effects

Implementation Guide

Optional (pre-class)	Have students read one of the articles on pollution in the "Additional Resources" section.
Introductory Slides	10 minutes: Go through the introductory slides on ecology and pollution.
Student Handout	25 minutes: Have students go through the handout in small groups and complete the prompts.
Wrap-up Discussion	10 minutes: Discuss student responses and answer any questions they may have.

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Adaptations

1. **Instructors may choose to assign a pre-class reading or video on pollution if desired. However, with the introductory slides, this is not necessary for completion of the activity.**

2. **Student handout allows students to choose from a number of options during the activity. Depending on how you would like to assess the activity, you may choose to assign specific counties and regions from the map to allow consistency within student responses.**

3. **The directions and slides tell students to work in small groups. If for any reason you'd like to have the students work independently, slight changes to the slides and handout will allow for students to complete the activity on their own.**

4. **A map of Viriginia was chosen from this particular exercise. While there are not maps available for each state, there is a map available for Colorado as well. Slight changes to the activity may be made to assess pollution in the western United States using the map of Colorado.**

Additional Resources

Peer Reviewed Articles for Instructor Background or Student Pre-class Reading:

Manisalidis, I., Stavropoulou, E., Stavropoulos, A., & Bezirtzoglou, E. (2020). Environmental and health impacts of Air Pollution: A Review. *Frontiers in Public Health*, *8*. https://doi.org/10.3389/fpubh.2020.00014

Lu, Jackson G. "Air Pollution: A Systematic Review of Its Psychological, Economic, and Social Effects." Current Opinion in Psychology, vol. 32, Apr. 2020, pp. 52–65., https://doi.org/10.1016/j.copsyc.2019.06.024.

Bucci, K., et al. "What Is Known and Unknown about the Effects of Plastic Pollution: A Meta-Analysis and Systematic Review." Ecological Applications, vol. 30, no. 2, 23 Nov. 2019, https://doi.org/10.1002/eap.2044.

Introductory Videos (optional use):

https://www.khanacademy.org/science/biology/crash-course-bio-ecology/crash-course-ecology-2/v/crash-course-ecology-11

Student Handout

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Name: Date:

Notes:

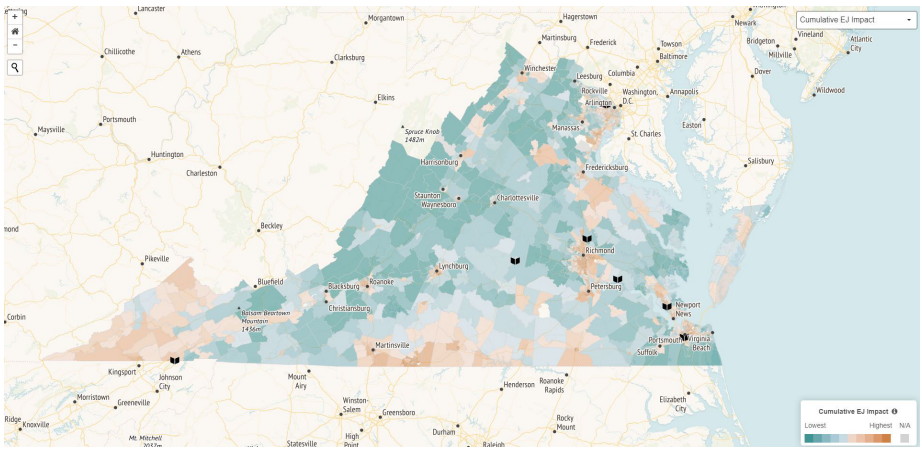
1. Go to "Mapping for Environmental Justing" at: https://mappingforej.berkeley.edu/
2. Choose the map of Virginia if it does not automatically open.
3. Scroll to the bottom of the page and click on "Learn more about our map". Answer the following questions:

What is a cumulative EJ impact?

What indicators are used to calculate EJ impact? Give an example of each type of indicator.

Explain the difference between population characteristics and pollution burden in the EJ impact.

4. Go back to the main page containing the map of Virgnia, and click on "See full screen map here". You should get a map such as the one below. You will have this map, which displays EJ impact by county, as a reference as you complete this activity.



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Name: Date:

Notes:

5. Explore the layering options within the map. You can change the visible layer by clicking on "Choose a layer" on the top right hand corner.

Click on the "Choose a layer > People of Color" option. What did you notice about the layer and how it relates to the EJ impact score?

Click on the "Choose a layer > Poverty" option. What did you notice about the layer and how it relates to the EJ impact score and other pollution/population characteristics ?

Click on the "Choose a layer > Adult Asthma" option. What did you notice about the layer and how it relates to the EJ impact score and other pollution/population characteristics?

Click on the "Choose a layer > Heart Disease" option. What did you notice about the layer and how it relates to the EJ impact score and other pollution/population characteristics?

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6. Click on one of the storybook links within the state.

What county was affected by the link you chose? _____

Explain the issue they are facing.

What population characteristics seem to be connected to the people affected by your chosen link?

Based on the information you have gathered today, do you believe that certain populations are over-burdened with the effects of pollution? Explain your response using examples from today's lesson.

How do we address these issues? Address this at the personal and systemic level. Note: Systemic is defined as "related to a larger system".